Specification for Purchase: Digital Channel Bank Equipment Austin AUS FOTS

CHANNEL BANK CAPABILITY. The equipment must be capable of all the following functions. Only minimum acceptable requirements are listed. Functions may be selectable by software programming, jumpers or option switches. Functions may also be "Options," which are only made available through the purchase of additional components, not part of the original purchase.

1. Equipment Enclosure. Charles Industries Model 360-80 or approved equal:

The equipment enclosure shall be designed for mounting in a 19-inch equipment rack, compliant with standard EIA-310. The shelf shall accommodate all common equipment and channel modules for a minimum of twenty four 2-wire or 4-wire Voice Frequency (VF) channels or data channels. Between two channel banks of the same capability, preference will be for the product that uses less vertical rack space. In other words, a product with a 1-RU equipment enclosure (i.e., 1-3/4") is preferred over a product with a 2-RU enclosure (i.e., 3-1/2").

2. Power Supplies:

The equipment must be capable of operating from a -48 VDC input without the use of an external adapter or converter. Common equipment and channel modules shall not derive power from a solitary on-board or modular power supply circuit. Thus, the failure of one power supply circuit shall not cause the entire channel bank equipment to fail.

3. Line Interface. Charles Industries Model 3603-81 T1 Controller or approved equal:

The equipment shall provide T1/DS1 coding as defined by ANSI T1.403. It shall operate in Superframe (SF) or Extended Superframe (ESF) modes and use Alternate Mark Inversion (AMI) or Binary 8 Zero Suppression (B8ZS) line coding. The channel bank must be capable of interfacing dual T1s or operating in T1 protection switching mode or drop/re-insert mode.

4. Timing Options. Charles Industries Model 3603-81 T1 Controller or approved equal:

The equipment shall provide programmable timing settings for the following three methods: internal, loop (recovered) and external timing. The external timing source shall be applied through a Composite Clock connector.

5. Line Build-Out. Charles Industries Model 3603-81 T1 Controller or approved equal:

The equipment must be programmable to accommodate different lengths of T1 cable. The equipment must provide *at-least* three range settings to accommodate cable lengths from 0 to *at-least* 600-FT. of cable.

6. Digital Encoding/Decoding. Charles Industries Model 3603-81 T1 Controller or approved equal:

T1 time-slot mapping of individual data or VF channels shall be programmable and independent of the physical card slot.

7. 4-Wire Channels (VF). Charles Industries 3652-80 12-Channel 2/4-Wire E&M/Transmission-Only Channel Unit or approved equal:

The equipment shall be capable of providing 4-wire E&M channels with nominal impedance set to, or capable of provisioning for 600 ohms, balanced. Receive signal levels shall be from -16 to +7 dBm, transmit levels shall be adjustable on the card or through software from -16 to +7 dBm. E&M signaling shall be selectable from types I, II, III, IV and V. Each channel must have a programmable option such that, on Carrier Group Alarm (CGA) condition, the channel's Earth or "E" lead will revert to "Idle" as opposed to "Busy."

8. 2-Wire Channels (VF). Charles Industries 3652-80 12-Channel 2/4-Wire E&M/Transmission-Only Channel Unit or approved equal:

The equipment shall be capable of providing 2-wire voice channels configured for TO (transmit only) audio with no talk battery or other voltage to/from the connected audio circuit. Nominal audio circuit impedance shall be set to, or capable of provisioning for 600 ohms. Audio transmission level shall be programmable over a range of at least -4.5 to 0 dBm transmit and -6 to 0 dBm receive.

9. Foreign Exchange Office (FXO). Charles Industries Model 3658-81, 6-Channel, 2-Wire Foreign Exchange Office Unit or approved equal.

The equipment shall be capable of providing a 2-wire Foreign Exchange Office (FXO) channel. The channel shall have programmable options for loop start/ground start, 600 ohm/900ohm impedance, transmit level and receive level.

10. Foreign Exchange Subscriber (FXS). Charles Industries Model 3657-81, 6-Channel, 2-Wire Foreign Exchange Subscriber, Private Line Automatic Ring-Down (PLARD) Unit or approved equal.

The equipment shall be capable of providing a 2-wire Foreign Exchange Subscriber (FXS) channel. The channel shall have programmable options for loop start/ground start, 600 ohm/900ohm impedance, transmit level and receive level. The channel shall have programmable options for FXS and Private Line Automatic Ringdown (PLARD) modes.

11. Ringing Voltage Generator.

The equipment shall be capable of providing circuitry for generation of telephone ringing voltage. The voltage shall be derived from the incoming -48 VDC supply. The voltage shall be an alternating current (AC) sine wave of 20 Hz frequency and of 60-90 VAC potential.

12. Office Channel Unit Data-Port (OCU-DP). Charles Industries Model 3632-81, 6-Channel Office Channel Unit-Data Port or approved equal.

The equipment must be capable of OCU-DP. OCU-DP channels shall provide 4-wire loop interface programmable for the following primary channel data rates: 2.4, 4.8, 9.6, 19.2, 56, and 64 kbps. The channel's 4-wire loop interface must be capable of 135 ohm, balanced input impedance. The input signal level shall be from 0 to 34 dB loop loss. The output signal shall be 1.4 V peak into 135 ohms.

13. Data Service Unit Data-Port (DSU-DP). Charles Industries Model 3633-81, 6-Channel Data Service Unit-Data Port or approved equal.

The equipment must be capable of DSU-DP. DSU-DP channels shall be capable of providing a Data Communication Equipment (DCE) interface to allow direct connection to data equipment. The DSU-DP must support the following physical data protocols: RS-232/V.24, RS-449/422/V.36, RS-530 and V.35. The DSU-DP must support ASYNCHRONOUS operation at the following data rates: 2.4, 4.8, 9.6, and 19.2 Kbps. In addition the DSU-DP must support SYNCHRONOUS operation at the above listed data rates PLUS 56 and 64 Kbps.

14. 56/64 X N Kbps Data Service Unit Data-Port (DSU-DP). Charles Industries Model 3634-81, 3-Circuit Data Service Unit-Data Port or approved equal.

The equipment must be capable of DSU-DP. DSU-DP channels shall be capable of providing a Data Communication Equipment (DCE) interface to allow direct connection to data equipment. The DSU-DP must support the following physical data protocols: RS-232/V.24, RS-449/422/V.36, RS-530 and V.35. The DSU-DP must support SYNCHRONOUS operation at 56 X N and 64 X N Kbps, where N = 1-24.

15. Alarms.

Alarms must be visible from the front panel and be accessible for remote connection.

16. User wiring.

All audio and E&M signal terminations shall be made using 50-pin, RJ-21 connectors.

17. Programming.

Any software programming will be implemented on the equipment through a "Craft" port or an Ethernet network management connection. The term "Craft" port refers to an RS-232 protocol connection made to a personal computer, using terminal-emulation software such as "Hyperterminal" or "Procomm-Plus". The term "Ethernet" connection refers to a 10/100-baseT network connection made to a personal computer using an 8-pin modular, RJ-45 connection.

18. Monitoring.

The equipment shall be capable of monitoring by a Simple Network Management Protocol (SNMP) system through the Ethernet network management port.

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CHANNEL BANK PURCHASE DESCRIPTION: The suite of products must provide "Capability" for all the functions listed above AND be outfitted to provide the following functions.

Vendor must provide a quantity of TWENTY-TWO (22) digital channel bank equipments of the same manufacturer and model, defined by (1) above and all necessary on-board and modular circuitry for each equipment to make trunk connections using a T1 interface as defined by (3) above. Each channel bank must be powered as defined in (2) above.

- Each equipment must be outfitted to provide at least TWENTY FOUR 4-wire channels (VF) defined by (7) above.
- Six of the channel bank equipments shall be equipped with *at least* one FXO channel as described in (9) above.
- Six of the channel bank equipments shall be equipped with *at least* one FXS channel as described in (10) above.
- Each channel bank equipment to be outfitted with FXS channel(s) shall also be equipped with a ringing voltage generator as described in (11) above.

Supply TWO (2) spare common equipment module or set of modules to provide functionality of T1 line interface, timing, line build-out and digital encoding/decoding as described in (3), (4), (5) and (6) above.

Supply TWO (2) spare equipment enclosure as described in (1) above

Supply FOUR (4) spare VF channel modules to provide functions described in (7) and (8) above.

Supply ONE (1) spare module for each required as COMMON EQUIPMENT to operate the channel bank.

Supply ONE (1) spare FXO channel module as described in (9) above.

Supply ONE (1) spare FXS channel module as described in (10) above.

Provide THREE (6) cables for the programming/provisioning or "Craft" interface port if the equipment has such an interface, as described in (17) above. Each cable must be suitable for connecting the channel bank equipment to a personal computer (PC).

Only newly manufactured equipment is acceptable. Bids for reclaimed or previously used equipment will not be considered.